CONSTRUCTION MANAGEMENT IN HONG KONG - FROM CAUSAL MODEL TO RESEARCH PROGRAMME

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Synopsis

The paper considers the quality of construction management in the context of Fox's (1989) causal model of the Hong Kong construction industry. Seven 'causes' and ten 'effects' are identified and formulated in terms of hypotheses for future research.

Introduction

In producing a causal model of the Hong Kong construction industry, Fox (1989) found the quality of construction management to be the most important of the 50 characteristics included in the model. However, almost all the relationships postulated in the model are derived from the opinions of previous writers on the subjects and not from any serious empirical study. In this paper we examine more closely the quality of construction management in Hong Kong, and its relationship with other characteristics in the model, as a means of (1) identifying testable hypotheses and (2) developing a future research programme in the subject.

Causes

The environment influencing the quality of construction management consists of a collection of factors - social, political, economic, legal and technological. Figure 1 shows a diagram of this in relation to the role of the construction manager.

Figure 2 shows the various postulated direct causal influences on the quality of production (construction) management (Fox, 1989). These influences are identified by the letters of the alphabet A to G and are described as follows:

(A)The quality of production management is affected by the low numbers of production personnel, who are attracted to work in other industries and sectors where working conditions are less hard.

(B)The degree of corruption influences the quality of management. It is known that organised gangs try to force contractors site staff to pay regular

money to them in return for leaving the site undamaged. Failure to pay protection money may result in deliberate damage to site office windows, for example, or setting fire to materials stored on site as a revenge.

(C)Lack of information about the performance of the industry means that resources are not channelled in the right direction. For example, there is evidence of insufficient numbers being trained in the industry whilst at the same time the official manpower survey statistics indicate an adequate provision (Shui On, 1990). The confusion over these conflicting sets of data makes managers' tasks that much more difficult since they often cannot find sufficient skilled labour.

(D)The intense competition between contractors and the high risks involved in the management of the production process often means that costs are cut to a minimum. It is suggested that construction managers have relatively little job security compared to their counterparts in the hotel industry or manufacturing sector. This lack of security is an important factor in the attractiveness of the role, and in contracting employers' attitudes towards training for the role.

(E)It is generally assumed that in the overall process of construction (including design and production), the design is completed before production starts and it is this clear-cut division which is one of the basic assumptions underlying the main standard forms of contract used by the Hong Kong Government and by the private sector. However, as a result of pressures from the client in those contracts, very often the contract for the production process i.e. the main contract, is signed and production started before the design is complete. The overlapping of these two processes hinders the effective planning of production, and indeed, one of the main activities of production staff is to cope with the changes in design intentions and to record (and later argue with the designer about) the effects of those changes. A considerable number of contractual experts and surveyors are employed for this purpose.

(F) It is suggested that one difficulty which exists in the overall construction process concerns communication between design people and production people. Apart from the barrier existing as a result of different educational background, for example between an architect and site agent, there is a problem which is unique to Hong Kong in that all information about the nature of the design recorded on drawings, specification, Bills of Quantities and instructions are in the English language. The average construction worker understands only Chinese so a major task on every construction project is to translate information from English to Chinese. The burden for this duty falls on the construction manager. Virtually nothing is known about this translation process or how it affects overall performance of the production process.

(G) The influence of the professional system is a significant factor. This is be generally held to be a desirable characteristic of the Hong Kong construction industry, since the concept of professionalism is aimed at raising standards of personal behaviour in respect of the care and attention given to the client's requirements. However the way that the professional system works is unique to the British System of construction and those of its present and former colonies. There are several separate organisations in the industry, all concerned with respective specialisms such as architecture, building, engineering and surveying.

In some areas the objectives of these organisations overlap, and there is competition between them, for example, in the wish to lead the team on a particular project. All claim the right to the role of 'project manager'. In this respect, there is a difference in the sector of building and civil engineering. In the sector for civil engineering, professionalism is seen to exist in both the design process and the construction process. Members of the Institution of Civil Engineers can be found in both organisations and indeed, many consulting engineering firms do not consider an engineer's experience sufficiently broad if he/she has not spent at least a few years on site involved in the production process.

In the building sector, however, the specialisms of architecture, surveying and building exist, and to a large extent cross fertilisation is impossible. Until recently, the rules of professional conduct for both architects and surveyors prevented them from pursuing a career path in a building contracting firm to director level. Two immediate consequences of this barrier are firstly that the production process, and hence employment in a building contracting firm, are regarded as of lower status compared with the work of design. Secondly, the members of those professions have little or no direct experience of the production process. The disadvantages of this phenomena have been reported over a period of more than twenty years but the power to change the situation has lain with the architects and surveyors, and they have been reluctant to do so far fear of losing their status in the construction hierarchy.

In the building sector, the benefits of high status of the design process, and the relatively low status perceived of the production (construction) process has resulted in an imbalance of talent being attracted to those respective areas. Whereas the brightest young people have had an opportunity for about fifteen years to study the design process in Hong Kong at University level on courses of Architecture, education for the production of buildings has been neglected until recently. This year marks the first time that intelligent young people have been able to graduate in Hong Kong with a degree oriented towards the production (construction) process, with courses running at both City Polytechnic and Hong Kong Polytechnic.

In summary, limited options are available in obtaining and retaining labour as the labour is easily attracted to other companies or other industries, whilst opportunities are evident in the flexibility of choice of sequence and method of construction or sources of materials and plant. The pressures are great because of the short durations for the construction work, the high working hours each week, the lack of information about the task to be done and the burden of language interpretation. However the lack of status, lack of training and the poor education of construction managers has resulted in a fairly low quality of management expertise in the production field (Vocational Training Council, 1989). The construction manager, occupying a key role in the production process, is subjected to these influences, but the weaknesses of education and training have not provided a way to cope effectively.

Effects

The postulated effects of the role of construction management on other industry characteristics are shown in Figure 3. All these characteristics are believed to cause a sympathetic response in those people familiar with the Hong Kong construction industry and are recognised as problems currently being experienced in the industry.

(H)Overall, the industry relies extensively on hand labour, there being more scope for the use of machines for most site operations.

(I)The unpleasant working environment on site is a deterrent to students/graduates who tend towards the air-conditioned comforts of 'office' work - especially with its perceived higher status.

(J)Wastage of materials is high and there is a big opportunity for improvement.

(K)The safety record is by far the worst of all industries/occupations in Hong Kong.

(L)A high proportion of contracts are awarded to foreign contractors in both the public and private sectors.

(M)Use of subcontracting is the norm.

(N)Contractors do not invest large amounts of capital in their own businesses and the industry can be regarded as under-capitalised.

(O)The level of training is insufficient to meet the needs. A large proportion of tradesmen have received no formal training.

(P)Methods of construction are largely based on tradition, with some notable

exceptions. This applies more in the building sector than in civil engineering and with local contractors more than overseas contractors.

(Q)Labour productivity, as a result of low levels of mechanisation, lack of trained operatives, and other factors, is low (Fox, 1990).

Hypotheses

From each of these links a hypothesis can be produced, ie.

1.*Low quality of production management is associated with (caused by):*

(a)Low numbers of production personnel
(b)High levels of corruption
(c)Low levels of information about industry performance
(d)High competition in production sector
(e)High overlap between design and production phases
(f)High influence of Hong Kong professional system
(g)High levels of complexity/low levels of communication

2.*High quality of production management is associated with (causes):*

(h)High levels of mechanisation
(i)Low attraction of student graduate towards; design not production
(j)Low wastage of materials
(k)High levels of safety
(l)Low use of foreign contractors
(m)Low use of subcontracting/multi-storey subcontracting
(n)High levels of capitalization of contractors
(o)High levels of training of operatives
(p)High levels of sophistication of methods of construction
(q)High labour productivity

Methodological Note

The above hypotheses flow naturally and logically from the previous work in the field. Whether they are indeed testable or not is very much an empirical question and therefore depends on the methodology employed. In principal, we believe that relevant data can be collected and the necessary tests can be made. This will be most likely by retrospective analysis of published summary statistics or questionnaire/interview techniques, although it is concievable that some of the work may be of an experimental nature, given the cooperation of the Hong Kong Government for instance. Whether the associations are cause or effect must, as always, be an *a priori* consideration.

Summary and Conclusions

This paper has focused on the causes and effects of construction management on the problems faced in Hong Kong by considering the environment in which the construction manager works with a view to proposing hypotheses and a programme of research concerning the quality of construction management.

By reference to previous research, seven key causal factors and ten effect factors emerge. These have been expressed in terms of hypotheses that we believe to be testable. Devising a programme of research now appears to be a relatively simple two stage task. The first stage would seem to be to test each hypothesis individually, perhaps by postgraduate or even undergraduate studies. The second stage should attempt to test the hypotheses collectively and simultaneously by a larger study, possibly with the cooperation of some interested Government body.

The importance of the work hardly needs stating - any improvement in the quality of production management is likely to have a significant impact on a number of serious problems and issues which face the Hong Kong construction industry and society in general.

References

Fox, P.W., 1989, A study of the Hong Kong Construction Industry using a systems approach, MSc Thesis, Salford University, U.K.

Fox, P.W., 1990, International Comparison of Construction Industries using parameters based on GNP, *Proceedings* CIB W-55 International Symposium in Building Economics and Construction Management, Sydney.

Shui On, 1990, *Construction Review 1990*, Shui On Group, Hong Kong

Vocational Training Council, 1989, *Manpower survey report on the Building and Civil Engineering Industry*, report by the Building and Civil Engineering Training Board.